INSURANCE OF THE CATASTROPHE HAZARD

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In insurance, as in other forms of business enterprise, an excess of disbursements over income is fatal to success, and security against the consequences of events which abnormally increase disbursements is a matter of primary interest to insurers and to policyholders. The largest and most variable item in the disbursements of an insuring organization is that attributable to "losses," payments on account of the occurrence of events against which insurance has been granted. Premiums, which are supposed to provide resources to meet loss payments, are calculated on the basis of the theory that past losses furnish an approximately accurate guide to the future. Hence an abnormal excess of actual losses over expected might bring about such an increase of disbursements as to lead to embarrassment or insolvency for the insurer and to inadequate protection for the insured.

Any event which causes a loss sufficiently great to embarrass an insuring organization and to endanger the security which it offers to policyholders is known as a "catastrophe." The point at which losses resulting from a single event become sufficiently large to classify the event as a catastrophe varies between insurers; the larger the income account, the larger the loss which can be experienced without serious disturbance. It varies also in the minds of insurance officials; the more conservative the management, the lower the point. Wherever the point may be, adequate protection of the policyholder demands that the insurer take measures to secure itself against such catastrophe losses.

Susceptibility to catastrophe varies greatly between different classes of risks and is dependent upon the probability of a single event causing a serious loss. The congested districts of large cities are subject to catastrophies in the form of conflagrations; isolated farm houses present no possibility of such losses. A single mine accident may cause deaths and injuries which entail abnormally large payments under a compensation law; an equivalent accident could not occur to the widely scattered drivers of a taxicab company.

The employes of a factory operated by steam power are subject to an explosion hazard which does not exist in an electrically operated plant.

Further, the catastrophe hazard bears no necessary relation to the average losses on a given class of risks. One class may show a heavy loss experience due to a large number of individual losses, no one of which is unusually serious. In another, losses may occur only occasionally but each loss may be extremely heavy, approaching or reaching the point which places it in the catastrophe group.

No one form of security against the catastrophe hazard has become standardized, each insurer adopting whatever of the available agencies seem best or most expedient—its decision resting on considerations of the size and character of its business and its underwriting practices. Three general methods are in active use; refusal to assume risks involving a catastrophe hazard, accumulation of reserve funds from which extraordinary losses may be paid, and shifting catastrophe risks to other insurers through reinsurance.

Limits. The simplest and most obvious method of dealing with the catastrophe hazard is to avoid it altogether by refusing to accept liability for losses beyond a certain amount on a given risk or group of risks. A fire insurance company may limit the amount of insurance which it will write on a single building, in a single block, or in a single "conflagration district." Employer's liability insurance is written with standard limits of $5,000 and $10,000; the $5,000 limit applying to liability for the injury of any one man, and the $10,000 limit applying to liability for injuries arising out of any one accident.[1] Underwriters at Lloyds limit the amount of marine insurance which they will grant on a single vessel; life insurance companies refuse to write policies with too large a face value; and principal sums of accident insurance policies are restricted in like manner.[2]

Further examples of this type of practice could be cited from practically every form of insurance. It is the individualistic method

[1] An increase in these limits involves the payment of additional premiums, the amount of which is determined by the susceptibility of the risk to the catastrophe hazard.

[2] Limits are also often set in order that the insured may not be able to make a profit by collecting the amount of the insurance, thereby minimizing the moral hazard.

of meeting the problem, each insurer assuming whatever risk it can safely carry and leaving the remainder to be placed with other insurers or retained by the policyholder. Its application forces large concentrated interests to seek their insurance from several insurers and increases the complexities attendant on a settlement of loss.

Accumulation of Catastrophe Reserves. Every insurance organization maintains a surplus from which, if necessary, unusual demands may be met. Even with careful attention to the limitation of risk there is a possibility of unusually heavy losses due to general conditions, and occasionally risks which underwriters have considered as "separate and distinct" may be shown to be connected in an unforeseen manner. Proper mangement requires a fund which will provide financial reënforcements with which to meet such losses.

Some organizations assume risks which are known to involve a catastrophe hazard on the theory that, while a catastrophe loss may embarrass them if it must be met from a single year's income, they will be able to meet such losses successfully if spread over a term of years. These insurers accumulate a "catastrophe reserve" by setting aside an appropriate amount. Depletion of the reserve to meet extraordinary losses is corrected by new accumulations in following years. The state workmen's compensation funds are required by law to maintain such reserves which, with one exception, are their sole immediate resource for meeting catastrophe losses. For example, in New York ten per cent of the premiums received by the fund are to be set aside until a total of $100,000 is reached, after which five per cent are to be set aside until the fund is large enough to cover the catastrophe hazard.

Maintenance of catastrophe reserves by individual insurers is at best of limited efficacy, particularly in the case of young or small organizations. Their adequacy as a protection against serious loss is open to question in most cases and they require that large sums be kept on hand in comparative idleness.

Reinsurance. Reinsurance is the latest and most favored method of dealing with the catastrophe hazard. The practice of limiting risks is objectionable to policyholders, who prefer to place as much insurance as possible with one company, provided it offers ample security; and also to insurers, who desire to offer coverage for

large risks and thereby increase the attractiveness of their agency contracts. The practice of reinsuring with other companies that portion of a risk which involves a catastrophe hazard enables a single company to assume large "lines" and, at the same time, offer security to its policyholders. Each reinsurer limits the risk which it will assume in order that its own stability may not be threatened, and requires the original insurer to retain a certain part of the risk to promote careful selection.

Reinsurances may be effected by the submission of individual risks to the reinsurer for acceptance or by means of a general contract under the terms of which the reinsurer automatically assumes a stated amount on each risk at the moment that the risk is written by the original insurer. Reinsurers are divided into two broad classes; independent reinsurers, whose relation to the reinsured is purely one of contract for indemnity, and mutual reinsurance organizations of which the reinsured are members.

Fire Insurance. The practice of the Associated Factory Mutual Fire Insurance Companies illustrates one method of reinsurance. If one of these companies accepts a risk larger than it seems wise to carry it immediately negotiates with other factory mutuals to cover the excess above the amount which it desires to retain. The amount ceded to any other single company depends on the judgment of the reinsurer and the reinsured as to the risk which can be carried safely. Under this plan each risk and each reinsurance is a separate problem to be independently settled.

The "reinsurance treaty," a form of contract used by European companies specializing in reinsurance, furnishes a simple and comprehensive method for shifting surplus risks. Under the terms of these contracts the reinsurer agrees to assume automatically a specified portion of each risk, subject to limitations of amount and location, as soon as the orignal contract becomes binding on the reinsured company, provided notice is given as required. The reinsurer agrees to accept a proportionate amount of the premium collected, minus a percentage for commission and other expenses; and to abide by the loss adjustments of the original insurer. In some contracts there is provision for profit-sharing on the business ceded. Contracts of this sort relieve insurers of the trouble of separate negotiation for each risk and remove the danger of loss between the time of acceptance of the risk and the placing of rein-

surance. Loss of profits which go to the reinsurer and the difficulty of watching European companies are drawbacks of the plan. In 1915, $63,538,652, or nearly two-fifths of the premiums paid for reinsurance by companies operating in the state of New York, were paid to treaty companies.

Desiring to retain the reinsurance business in their own hands a number of companies writing fire insurance have organized mutual associations for the purpose of distributing the catastrophe risk. The largest of these is the Reinsurance Bureau, an organization of sixty-three American and European fire insurances companies, which writes reinsurance on risks in thirty-four states. The Bureau is in charge of a manager who acts as attorney for the member companies, accepting and distributing risks according to a basic agreement covering its operations. Risks in certain localities and of extremely hazardous character are barred and limitations are placed on the amount of those which are accepted. The original insurer is required to retain, on certain risks, an amount equal to that ceded through the Bureau and, on other classes, an amount equal to at least one-half of the amount ceded. All cessions, if made within the rules, are obligatory and binding. Members participate on a percentage basis, each being responsible for its individual participation of one to three per cent of all reinsurance effected.

The Reinsurance Clearing House, an association of fifteen fire insurance companies, combines the automatic cession feature of treaty agreements with a mutual form of organization. Each member company assumes five to twelve and one-half per cent of the reinsurance risk and participates in earnings and losses.

A company may and usually does employ more than one method of avoiding catastrophe losses. Limits must be set for localities and risks not covered by reinsurers. Even though a company retains but a relatively small amount on individual risks it must limit the number of risks which it carries in a given area, for a conflagration might cause a heavy drain on its resources through the occurrence of a large number of small losses. In order to cover a large risk reinsurance must often be secured from several reinsurers as each places a limit on the amount it will assume. Maximum possible coverage is further limited by the amount of reinsurance which can be obtained through all available and desirable agencies.

Workmen's Compensation. It is usually required by law that the amounts payable to injured employes under a workmen's compensation policy shall be limited only by the provisions of the compensation act. An insurer can apply the principle of limits only by refusing to accept undesirable risks. If a risk is accepted it carries with it the catastrophe hazard incident to its classification. Reinsurance is, therefore, peculiarly necessary in this branch of the business in which the reinsurer, in return for a percentage of total premiums, assumes liability for all losses in excess of a specified amount arising out of any one accident.

A considerable amount of this business is handled by London Lloyds and by the larger insurance companies but the mutual principle has been applied in at least two organizations; the Workmen's Compensation Reinsurance Bureau, and the Mutual Corporations' Reinsurance Fund. The Bureau is maintained by fifteen stock companies which pay into a general fund five per cent of premiums received on account of risks in the state of New York and two and one-half per cent of premiums from other states. With the exception of losses on certain prohibited extra-hazardous classifications, the bureau assumes liability for losses due to a single accident in excess $25,000. Members participate in any surplus above the requirements of the fund and are liable for assessments in case of a deficit. For accounting purposes the bureau divides its business into two groups according to the percentage of premiums paid, each group being financially distinct. Dividend payments are subject to the requirement that a fund of $250,000 be accumulated and maintained for each group.

The Mutual Fund is operated on a somewhat similar plan. Its membership includes nine mutual companies in New York State. Contributions of five per cent of total premiums are made to the fund and each company is liable, if necessary, for an additional assessment of five per cent of premiums collected during the year preceding a catastrophe loss. Losses in excess of $25,000 but not exceeding $100,000 are paid from the fund. The risk in excess of $100,000 is usually shifted to other reinsurers.

Akin to these organizations is "The Associated Companies," a combination of ten stock companies exclusively for the writing of mining risks, which involve a high degree of catastrophe hazard.

All premiums and losses are divided among the companies equally, the ordinary as well as the catastrophe risk being distributed.

No attempt has been made to cover the entire field of reinsurance—examples might be cited *ad infinitum* but those presented are sufficient to show the growing tendency to extend the principle of insurance from the distribution of the losses of individuals to the distribution of losses of insurers. Insurance organizations, by protecting themselves, can offer greater security to their policyholders and enable large property owners to carry their insurance with a relatively small number of companies. Systematic coöperation has increased the ease and certainty with which business affairs may be conducted.